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Status and Management of Ermine on the Queen Charlotte Islands, British Columbia

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INTRODUCTION

Mustela erminea haidarum, commonly known as the Queen Charlotte Islands (QCI) ermine, is one of the few endemic mammals of the Queen Charlotte Archipelago which is located off the northwest coast of British Columbia (BC) (Figure 1). Endemic mammals on QCI are of special conservation interest because of their unique genetic makeup following prolonged isolation from mainland populations.

The continued existence of this rare subspecies of "short-tailed weasel" is considered at risk. Provincially it is listed as endangered/threatened (Red List), the most serious category of risk, because it faces or is likely to face imminent extinction if factors limiting its survival are not managed (Harper et al 1994). Federally, the QCI ermine is listed as vulnerable and is a species of special concern because of characteristics that make it particularly sensitive to human activities or chance natural events. This classification is presently under review by the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

This research Extension Note reports on work designed to update the knowledge of QCI ermine distribution, abundance, and habitat associations, with the goal of developing management recommendtions for future conservation efforts. This information is intended to improve the awareness of the general public, trappers, and private landowners regarding QCI ermine, and to assist foresters in developing silvicultural prescriptions. The research/inventory work was initiated by the BC Ministry of Forests (Research Section, Vancouver Forest Region) and supported by the BC Ministry of Environment (Smithers Regional Office) in their joint responsibility for conserving forest wildlife.

PHYSICAL DESCRIPTION

Ermine are distributed across North America and Eurasia. QCI ermine likely became isolated from mainland ermine during the Pleistocene glaciations when small areas of the QCI archipelago remained free of ice and thus provided habitat for the ermine (Foster 1965). The QCI ermine is a unique subspecies from other ermine because its skull is proportionately larger in its anterior measurements, and because males and females are much more similar in size than in mainland populations (Foster 1965; Cowan 1989). The QCI ermine weighs slightly less than 100 g, and it has an elongate body, short legs, and a smallish head. In the summer its fur coat is rusty brown with a white belly (Figure 2), while in winter its fur becomes white (Figure 3). The tail remains black-tipped throughout the year.

DOCUMENTED OBSERVATIONS

There are 32 verified records of the QCI ermine registered with the Royal British Columbia Museum, other musea, and the Conservation Data Centre of the BC Ministry of Environment.[1] The records show that the QCI subspecies has always been rare in historical times (Foster 1965). Because of this rarity and high risk, the BC Ministry of Forests and the BC Ministry of Environment jointly undertook an inventory of ermine on QCI from 1992-1998. Various detection techniques

[1] Information about any pre-1997 observations of QCI ermine was compiled from records in the Conservation Data Centre of the BCMOF, and from specimens held in the Royal BC Museum, the American Museum of Natural History, the Cowan Vertebrate Museum at the Univ. of BC, the Smithsonian Institution, and the Museum of Vertebrate Zoology at the Univ. of California, Berkeley and Los Angeles.

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Figure 1. QCI - Ermine Locations

were used over the seven-year period: live trapping, setting baited track stations for prints, and snow tracking. Little evidence of ermine was detected. Only two individuals were caught alive (in 1993 on Moresby Island), and no proven tracks were seen in the snow or at the track stations. Results indicate that the species continues to be very rare on QCI.

In addition, historic (~1920s) to present day observations of ermine and their signs were gathered during interviews with residents and trappers in the community during 1997-98 (Figure 1). The interviews confirmed a broad distribution of ermine on both Graham and Moresby Islands, and expanded the known distribution to Louise and Burnaby Islands. Ermine occurrences were concentrated at lower elevations, and, as expected, in the human-settled portions of the east side of the archipelago. Most observations occurred in the Coastal Western Hemlock, submontane, wet, hypermaritime (CWHwh1) biogeoclimatic variant (Green and Klinka 1994). Observations within this region were clumped, and suggested some patterns of habitat association. Ermine were observed most often in forested habitats of various ages, and there is no evidence that they depend on mature forest or strongly avoid clearcuts. The great majority of the observations occurred within 100 m of water, both fresh and marine, suggesting that shoreline habitats provide the best areas for foraging (e.g. the intertidal) and cover.

REASONS FOR RARITY

The explanation for the continued rarity of ermine on QCI is complex. One of the influencing factors is food. Ermine across North America and Eurasia are specialist predators of small

Figure 2. Queen Charlotte Islands ermine at Rose Spit, Graham Island, summer of 1988. (Photo Stan Hale Sr.)

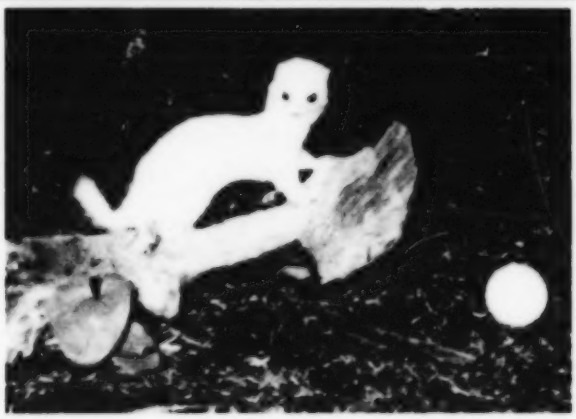

Figure 3. Ermine specimen in winter pelage, Queen Charlotte Islands Museum. (Photo P. Buck, Systems Forestry Consulting)

mammals known as voles and lemmings: *Microtus, Lemmus, Dicrostonyx,* and *Clethrionomys* (Fitzgerald 1977; Erlinge 1983; Fagerstone 1987). None of these preferred prey is found on QCI, and this may reduce the ermine's ability to survive and reproduce in high numbers. Available potential prey for ermine on QCI includes: a few endemic small mammals such as deer mouse (*Peromyscus maniculatus keenii*), Sitka mouse (*Peromyscus sitkensis prevostensis*), and dusky shrew (*Sorex monticolus elassodon, Sorex monticolus prevostensis*); birds and eggs; invertebrates and marine invertebrates; and introduced European roof rats (*Rattus rattus*). Because ermine are not particularly well adapted to catching any of these prey types, their food sources are likely very limited. Ermine on QCI also scavenge (e.g. muskrat, deer, and salmon).

Another factor is competition with other predators. There are several other carnivores on QCI, both native (pine marten *Martes americana nesophila*) and introduced (red squirrel *Tamiasciurus hudsonicus lanuginosus*; roof rat; raccoon *Procyon lotor vancouverensis*). These may effectively compete against ermine for the same prey base. The conversion of mature forests to farmland and younger forests may have facilitated increases in prey populations (e.g. deer mice) resulting in further increased populations of the more effective ermine competitors. The pine marten, a more generalist predator than the ermine, preys or scavenges some of the introduced species, for example red squirrels and black-tailed deer (*Odocoileus hemionus columbianus*). Interviewed trappers suggested that marten populations have increased since the 1940s (5-10 fold), probably in part because of this additional food base, although trapping effort has declined since this time as well. More pine marten are likely now competing with the QCI ermine.

Thirdly, QCI ermine face some predation risk. Feral and domestic cats (*Felis catus*) kill ermine, as reported on three occasions in the interviews. Other potential predators include the bald eagle (*Haliaeetus leucocephalus*), northern goshawk (*Accipiter gentilis*), sharp-shinned hawk (*Accipiter striatus*), red tailed hawk (*Buteo jamaicensis*), and marten (Weckerth and Hawley 1962).

RECOMMENDATIONS FOR CONSERVING QCI ERMINE

The historical record, and this research/inventory work, indicate that the QCI ermine is a very rare animal and at substantial risk of extinction. It now faces ecological circumstances, through human activities, that likely increase that risk. To reduce the risk, the general public and managers of Crown and private lands should follow these recommendations:

1. Eliminate human-related ermine mortality, and competition with ermine, where possible, such as by:

   • Maintaining the current ban on commercial trapping of QCI ermine.

   • Reducing the risk of incidental catch of ermine in marten Conibear sets by avoiding the use of pan-like additions to the trigger wires (as these are more easily triggered by ermine), and by bending trigger wires away from the vertical.

   • Controlling domestic cats so that they do not become feral, and do not hunt in ermine habitat which includes many meadows and hedgerows.

   • Controlling populations of raccoons and rats.

   • Researching means of controlling populations of other introduced species.

2. Reduce risk of predation by free-ranging predators by maintaining cover for ermine, specifically by:

   • Maintaining wave-washed driftwood and logs above the high tide line on marine shorefronts.

   • Developing silvicultural prescriptions that maintain coarse woody debris in riparian and marine shorefront areas, and through using selection harvesting systems within and adjacent to riparian areas that encourage mixed-species, uneven-aged stand structures with well-developed understories of trees, shrubs, and herbs in the lower strata (see Doyle 1990; Samson and Raymond 1998).

3. Enhance populations of primary ermine prey, likely including deer mice and passerine birds, by:

   • Developing silvicultural prescriptions, especially in riparian areas, that enhance growth of plants with heavy seed crops (e.g. graminoids, alder).

   • Maintaining or enhancing coarse woody debris in all silvicultural prescriptions.

- Developing silvicultural prescriptions, especially in riparian areas, that promote or sustain the development of mixed-species, uneven-aged stands with well-developed lower strata of trees, shrubs, and herb cover.

4. Continue to gather information regarding the status of QCI ermine by:

- Continuing to have trappers submit pelts and carcasses of any accidentally trapped ermine, to the BC Ministry of Environment Conservation Officers in Queen Charlotte City (250-559-8431).

- Encouraging all observers to report observations or evidence of QCI ermine to the Conservation Data Centre of BC Environment in Victoria (250-356-0928), or the BC Ministry of Environment in Queen Charlotte City (250-559-8431) or Smithers (250-847-7260).

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SOUTH MORESBY FOREST REPLACEMENT ACCOUNT

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